

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number  
**WO 2005/075831 A1**

- (51) International Patent Classification<sup>7</sup>: F04D 29/32, 29/70
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (21) International Application Number: PCT/IB2005/000239
- (22) International Filing Date: 1 February 2005 (01.02.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: BO2004A000047 3 February 2004 (03.02.2004) IT
- (71) Applicant (for all designated States except US): SPAL AUTOMOTIVE S.r.l. [IT/IT]; Via per Carpi, 26/B, I-42015 Correggio (IT).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): SPAGGIARI, Alessandro [IT/IT]; Via Leonardo Da Vinci, 8, I-42015 Correggio (IT).
- (74) Agents: BIANCIARDI, Ezio et al.; Bugnion S.p.A., Via Goito, 18, I-40126 Bologna (IT).

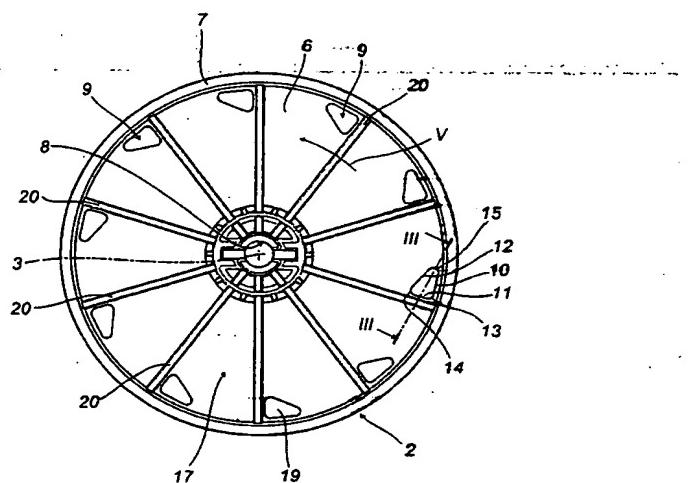
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AN AXIAL FAN



(57) Abstract: Described is an axial fan in which an impeller (1) comprises a hub (2), motor-powered so that it rotates about its own central axis (3) and a plurality of blades (5) extending from the hub (2) in directions transversal to the hub (2) axis of rotation (3); the hub having a cup shape and formed by a ring-shaped side wall (7) and a bottom wall (6) which has a plurality of long ribs (20) arranged in a radial direction and extending in height towards the hub (2) cavity, each of the ribs (20) abutting on the internal face of the ring-shaped side wall (7) and delimiting, together with said ring shaped side wall, a corner area of the bottom wall (6) positioned in front of the rib (20) with reference to the hub (2) direction of rotation (V); each corner area having a through-hole (9) for discharging any debris, in particular water, sand, soil or sludge, from the hub (2) cavity to the outside of the hub (2). The through holes (9) are evenly distributed along a circle centred on the hub (2) axis of rotation (3) and have a substantially triangular prismatic shape with a vertex wall (15) facing forwards according to the hub (2) direction of rotation (V).

WO 2005/075831 A1